

Message Text

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FM SECSTATE WASHDC

TO AMEMBASSY BONN

C O N F I D E N T I A L STATE 199562

E.O. 11652:

TAGS: TGEN, ENRG, GW

SUBJ: US/FRG COOPERATION IN LIQUID METALS MAGNETOHYDRODYNAMICS
(MHD) -- ENERGY R&D

REF: BONN 14067

1. REGARDING FURTHER DISCUSSIONS LIQUID METAL MHD COOPERATIVE
PROGRAM BETWEEN TUB AND ANL FOLLOWING FACTORS BEAR ON PROBLEM
AND SHOULD BE CONSIDERED FURTHER:

(A) ANL STILL INTERESTED PROCEEDING WITH COOPERATIVE PROGRAM
OUTLINED IN REPORTS OF RECENT WORKSHOP MEETINGS BETWEEN TUB AND
US SPECIALISTS. UNCERTAINTY ON GERMAN SIDE HOWEVER, RE PROCEED-
ING FIRST MAJOR JOINT EXPERIMENT -- STUDY OF INTERACTION TWO-
PHASED LIQUID METAL GAS FLOWS WITH A MAGNETIC FIELD AT HIGH
TEMPERATURES -- IS CAUSING MAJOR PROBLEMS BECAUSE OF GERMAN
DELAYS. ANL THEREFORE PROCEEDING WITH EVALUATION ALTERNATIVE
PLANS TO CARRY OUT EXPERIMENT. MODIFICATION VARIOUS FACILITIES
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AVAILABLE IN U.S. NOW BEING STUDIED. BEAUSE IMPORTANCE PRO-

POSED EXPERIMENT TO MHD RESEARCH, IT WILL BE CARRIED OUT REGARD-
LESS DEGREE GERMAN PARTICIPATION. CLEARLY, NET BENEFITS FROM
EXPERIMENT TO FRG WOULD BE MAXIMIZED THROUGH DIRECT AND COMPLETE
PARTICIPATION. EQUIPMENT NOW BEING DEVELOPED IN U.S. FOR EXPERI-
MENT. FRG DECISION NOT COOPERATE WILL CAUSE SCHEDULE DELAY AND
FUNDING PROBLEMS; HOWEVER, FUNDING APPEARS SOLUBLE. IF FRG
REACHES AFFIRMATIVE DECISION NEAR FUTURE, STILL POSSIBLE CONTIN-
UE WITH PLANNED COOPERATION AND CARRY OUT EXPERIMENT AT TUB.
THE LONGER THE DELAY, HOWEVER, THE STRONGER THE PROBABILITY IT
NECESSARY CARRY OUT EXPERIMENT IN U.S., PROBABLY AT ANL.

(B) FUNDAMENTAL BASIS FOR UGMR COOPERATIVE PROGRAM IS TO COORD-
INATE AND IMPLEMENT JOINT EXPERIMENTS, E.G., LIQUID METAL RE-
SEARCH, SO BOTH SIDES RECEIVE MAXIMUM RETURN ON FUNDS INVESTED.
MOTIVATION STILL VALID AND IMPORTANT. COOPERATIVE PROGRAM ORIGI-
NALLY CONCEIVED WAS MIXTURE BASIC STUDIES AND APPLIED EXPERIMENTS
THAT WOULD HOPEFULLY CULMINATE IN IDENTIFICATION OF LIQUID METAL
MHD CONVERSION SYSTEM. MUCH OF RESULTING INFORMATION WOULD HAVE
GENERAL APPLICABILITY TO VARIOUS AREAS LIQUID METALS RESEARCH
AND TECHNOLOGY DEVELOPMENT. THE FACT THAT FIRST PHASES OF PRO-
POSED PROGRAM WOULD DEAL WITH MANY BASIC PROBLEMS AND PROCESSES
IN SINGLE- AND TWO-PHASED OHD (ORDINARY HYDRODYNAMIC FLOW) AND
MHD APPEARS NOT TO HAVE BEEN PRESENTED PROPERLY TO DFG AS EVIDENCED
BY EMBASSY'S REPORTED CONCERN WITH APPLIED NATURE OF TUB PROGRAM.
FURTHERMORE, CONCERN RE BUILDING LARGE FACILITY FOR CARRYING OUT
SUCH LARGE EXPERIMENTS SUGGEST LACK OF APPROPRIATE FACILITIES
NEEDED FOR CARRYING OUT LIQUID METALS RESEARCH PROGRAMS. CLEARLY,
MUCH BASIC WORK NEEDS BE DONE TO ESTABLISH FEASIBILITY LIQUID
METAL CONVERSION CONCEPTS. APPEARS THAT POTENTIAL APPLICATION
BASIC WORK SHOULD NOT BE DETERRENT BUT A POSITIVE SELLING POINT
FOR PROGRAM. IN VIEW ABOVE, IT NOW APPEARS DESIRABLE TO SUGGEST
FURTHER DISCUSSIONS WITH APPROPRIATE GERMAN OFFICIALS RE POTENTIAL
APPLICATIONS LIQUID METAL AND CONVERSION RESEARCH TO BREEDER AND
FUSION REACTOR AND TO OTHER POWER SYSTEMS. RESPONSIBLE U.S.
TECHNICAL EXPERTS WOULD BE HAPPY PARTICIPATE IN SUCH DISCUSSIONS
IF INVITED DO SO.

(C) PROPOSED GERMAN COSTS CARRYING OUT JOINT EXPERIMENTS APPEAR
TO BE HIGH, ONE MILLION DM GERMAN FUNDING BASED ON PRELIMINARY
ESTIMATES DEVELOPED AT LAST US-FRG WORKSHOP. REFINED ESTIMATES
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DEVELOPED AT ANL SHOW GERMAN COSTS IN \$200,000 RANGE; U.S. COSTS
WILL EXCEED \$350,000. PERHAPS TUB SHOULD BE ENCOURAGED DEVELOP
MORE REALISTIC ESTIMATE AND PRESENT NEW FIGURE TO DFG. AGAIN,
U.S. EXPORTS PLEASED PARTICIPATE IF INVITED. LOWER COSTS MAKE
PROPOSED EXPERIMENT MORE PALATABLE. IRREGARDLESS, GERMAN SIDE
STILL GETTING BARGAIN RE INFO AND DATA THAT WOULD EVOLVE FROM EX-
PERIMENT AND FROM DIRECT ACCESS U.S. PAST WORK THIS FIELD.

(D) RE FUTURE COOPERATION, U.S. INTEREST EXISTS EVEN IF TUB PROGRAM CURTAILED AND REORIENTED TOWARD BASIC RESEARCH. SPECIFICS OF COOPERATION, HOWEVER, WOULD NEED BE REEVALUATED AND REDEFINED TO ASSURE QUID PRO QUO IN LIQUID METALS MHD RESEARCH -- THIS WAS BASIC PROVISION ORIGINAL MEMORANDUM OF UNDERSTANDING.

2. DISCREETLY DRAWING ON ABOVE BACKGROUND AND AT EMBASSY DISCRETION SCIATT REQUESTED EXPLORE DESIRABILITY U.S. PARTICIPATION CLARIFYING ALL ISSUES. PLEASE ADVISE. RUSH

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